Read the Special Articles this month on Foods.

CALIFORNIA STATE BOARD OF HEALTH.

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REGULAR MEETINGS

The California State Board of Health meets regularly the first Saturday of each month, but the stated meetings of January, April, July, and October constitute the quarterly meetings required by law to be held at the Capitol of the State.

By courtesy of the University of California the Food and Drug Laboratory and the Hygienic Laboratory are located in University buildings at Berkeley, California.

Address all communications to the

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JANUARY BULLETIN.

GENERAL PRINCIPLES UNDERLYING THE USE OF FOODS.

M. E. JAFFA.

Perhaps there is nothing more characteristic of the day and the hour in which we live than the widespread interest in the subject of food. People have always been interested in satisfying hunger, and tickling the palate, but the modern intelligent men and women are beginning to put earnest thought into the selection of the food materials upon which depends their *life,* health, and working capacity. But thought alone does not properly solve many problems, unless there be first acquired some facts, or knowledge, some good foundation principles upon which to form a judgment or to base a decision.

The scientific principles which underly the proper selection of foods are simple and easily understood. Chemical analysis has shown us that all foods, no matter how simple or how complex then may appear, contain only four classes of materials. Each class has many subdivisions containing an infinite variety of chemical compounds. But nothing has been found that can not be classified under these four heads. One of these is water, and need not be discussed here. Another is mineral matter, which is found in sufficient quantities in almost all articles of food to insure a plentiful supply to the adult system, through any ordinary diet. For infants, the amount and kind found in milk is suited to all their needs. That leaves us only two main classes of nutrients to understand and to deal with; the nitrogenous group and the non-nitrogenous.

The question is naturally asked, "Of what use is this classification? In what way does it help the ordinary person?" The answer is at once plain when we consider that these two classes of nutrients have entirely distinct and separate offices to perform in the body. The protein or nitrogenous group builds tissues; the bones, muscles, nerves, internal organs, etc. It supplies material both for the building of new tissues, as in growth, and for the repair of the old. The non-nitrogenous group furnishes heat to keep the body warm and energy or power with which to perform our work. This material may be stored up in the body for future use in the form of fat, but can never be used to build real or deep tissues. Fat in the body is like coal in the basement, ready to be converted into heat and energy. Our need of it after we have accumulated enough fat to round out our frames is in direct proportion to the weather and to the amount of energy we expend in both voluntary and involuntary functions. The man at hard, outdoor work in cold weather requires much more of this class of food than the man writing at a desk in a warm office.

It is important that we should not lean too much to one side or the other in choosing our foods. The seriousness of such a mistake depends

absolutely on the circumstances. For instance, to deprive an infant of protein would probably be far more serious than to give it too much; while to overdo the protein with an adult might so injure the organs of elimination as to bring on serious trouble, especially if animal protein were used entirely. As a general rule, an excess of carbohydrates causes less trouble in the system than an excess of protein. This, however, would not be a safe rule to follow to an *extreme degree*. Fortunately for us, most foods contain some nutrients from each main class. When we classify foods we place them according to the largest amount or importance of some ingredient that they contain, but that does not mean that they do not contain any other. The following table illustrates this point. Some of our common foods are placed under the class to which they belong, while in parenthesis are indicated what important nutrients of the other class they contain. Very small amounts are not so indicated:

TABLE I. SHOWING CLASSIFICATION OF FOODS.

NITROGENOUS.	NON-NITROGENOUS.		
I.	II.		
	1. *Carbohydrates.*		2. *Fats.*
Meat (fat).	(*a*) Starches and	(*b*) Sugars.	Meat fat.
Milk (fat and sugar).	1. Cereals (protein);	Sugar.	Fish oil.
Eggs (fat).	2. Bread (protein);	Syrup.	Butter.
Cheese (fat).	3. Macaroni (protein);	Honey.	Cream.
Fish.	4. Rice (protein);		Vegetable oil.
Oysters.	5. Potatoes.		(Olive, etc.)
Nuts (oil).	6. Green vegetables.		
Beans (starch).	7. Fruits (fresh and dried).		
Peas (starch).			

It is important also that we should not ignore the subdivisions. While the sugars, starches, and fats belong in one large class, and apparently perform the same office, they vary greatly in other ways. Starch must first be converted into sugar, in the digestive tract, before it is absorbed and used. Therefore, it would be much more difficult for the body to obtain all of its carbohydrate from starchy food, rather than from starch and sugar both. Again, fat is worth two and one fourth times as much as either starch or sugar for producing energy. The Esquimaux and Laplanders realize this when they eat their tallow and blubber during the long and severe Arctic winters.

Man has, of course, in common with the animals, a power of instinctive selection of foods; but this power decreases in exact proportion to the degree in which he departs from natural and simple conditions of life. In the complexity of our present system of living, it can be relied upon to a very limited extent only. We must always keep the balance, however, between the old method that we are giving up and the new that we are just beginning to learn to use. Especially is this true because we have no way of knowing, at present, the exact proportion that should exist between the two classes of foods,—but we do know it approximately. We know it perfectly for infants, because we have mothers' milk as a model. We know the exact proportions of protein, and of fat and sugar, that nature provides for babies, and we can furnish substitutes for them when there is no mothers' milk or after the supply has given out.

There have been a great many experiments performed of different kinds, all tending toward establishing rules for the exact amounts of

food materials needed by different people under different circumstances, and the results have been published by the Government. A list of popular publications bearing on this subject will be found on page 167. Very accurate data have been obtained for army rations and have proven practical in recent tests during the Russo-Japanese war.

The food problem is not a problem to all people or at all times. Thousands of men and women who are normal in body and in occupation, eating from the ordinary well-provided table, and never giving the subject a thought, are as well and as properly nourished as if hours had been spent on their dietaries. But unfortunately they are not in the majority. Cases of malnutrition are only too frequent in people of all ages and from all classes of society. More diseases, both of body and mind, are due to this cause than we have any idea of, because the disease is named variously, according to the varying results, instead of by the name of the first cause, Malnutrition. Sometimes this condition is due to an incapacity on the part of the system to utilize the nourishment in the form in which it is given, and at other times it is due to an insufficient or incorrect supply.

The first step in the process of adjusting these difficulties, or preventing possible future ones, is to keep clearly in mind the two classes of foods and their uses in the body, so that we may provide them in varying proportions, according to the age and condition of the person to be considered. A first general rule that is safe for all people to follow is to eat from both classes and from each subclass. Each has its place in the human economy and each one probably has its special advantage. Many people give up a group of foods because one or two of the group do not agree. For instance, a very thin person who needs to be fattened will say, "I can not eat fat," because both meat fat and butter are either distasteful or cause distress. They have not tried cream or oil or nut butter; neither do they try the fat in different combinations. It is better to persist until the right article or combination is found than to eliminate an important group from our dietary.

More illustrations covering this point will be found in the following articles which continue the present subject under different heads and consider the practical application of first principles to different conditions of life.

NUTRITIVE VALUE.

M. E. Jaffa.

The term "nutritive value" of a food is not always used in a proper or exact sense. The term implies the proportion of nourishing material to the amount of water that the food contains. On this basis, some people have come to use the term carelessly, as synonymous with dry matter. This is often misleading, especially at first glance. Two foods may have the same amount of water and the same amount of dry matter, and yet one may contain more nourishment in its dry matter than the other. For instance, bread and full cream cheese have been said to have the same nutritive value because they have about the same proportion of dry matter. But the dry material of cheese contains 33 per cent of fat, while bread has only about 1½ per cent. As fat is worth 2¼ times as much as starch (the other ingredient of bread) for heat and energy, the cheese is of far greater nutritive value.

Again, we must remember that the nutritive value to the individual depends upon the particular nutrient that he is in need of. In looking over a table of foods in search of those that may be valuable for a certain purpose, we must always bear in mind that the fuel value of starch and of protein are the same, although it is undesirable that we should get our fuel from protein. Real value depends upon the use we make of material, and therefore the nutritive value of a food varies with the need of the system for it.

The word value usually has an associating thought of money, and there is this element to be considered also. In buying food *by the pound* we pay for water that is in it, as well as for the dry matter. Therefore, the less water it contains, other things being equal, the cheaper it is, even though the price per pound be the same. This difference in food must not be lost sight of in looking over tables or lists of nutritive values.

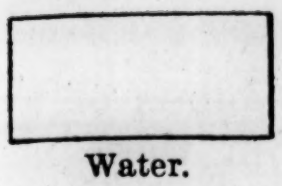
In the following graphic presentation of food values we have attempted to show at a glance the proportion of water, protein, carbohydrates, and fat that some of our common foods contain.

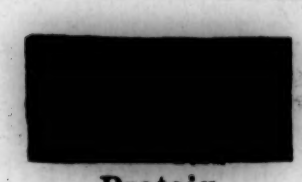
The calorie value or fuel value is not represented. For those who would like such information Table I is inserted. The calorie is the unit of heat.

Table Showing Cost of Foods as Regulated by Protein and Fuel Values.

Kind of Food Material.	Price per Pound.	Protein.	Fuel Value per Pound.	Cost One Pound Protein.	Cost 1000 Calories.
	Cents.	*Per cent.*	*Calories.*	*Dollars.*	*Cents.*
Meat—					
Round	12.5	19.2	745	$0.60	18.0
Sirloin	18.00	18.0	985	1.00	18.0
Milk 10c. a quart	5.00	3.5	310	1.40	15.0
Milk 15c. a quart, certified	7.50	3.5	310	2.15	22.0
Skimmed milk 2½c. a quart	1.25	3.5	255	0.36	5.0
Eggs—40c. a dozen	25.00	13.0	735	2.00	36.0
Cheese, Swiss	35.00	27.5	2010	1.30	17.5
Cheese, Cheddar, full cream	20.00	26.0	2145	0.80	10.0
Cheese, Cottage	15.00	20.0	310	0.75	45.0
Beans	5.00	22.5	1605	0.20	3.0
Wheat flour	3.50	10.0	1600	0.30	2.5
Wheat bread	5.00	8.0	1205	0.60	4.0
Corn meal	4.00	10.0	1700	0.40	2.5
Rice	8.00	6.0	1630	1.30	5.0
Potatoes	2.00	1.5	310	1.30	6.0
Apples	4.00	0.5	220	8.00	8.0
Bananas	7.00	1.5	460	4.60	14.0
Peanuts	10.00	32.0	2610	0.32	3.9
Walnuts	20.00	15.0	3075	1.30	6.5

LEGEND.

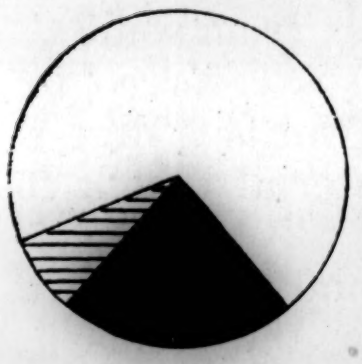

Water.

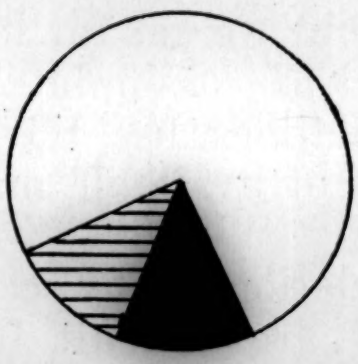

Protein

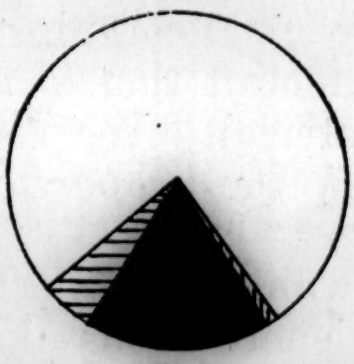
Fat.

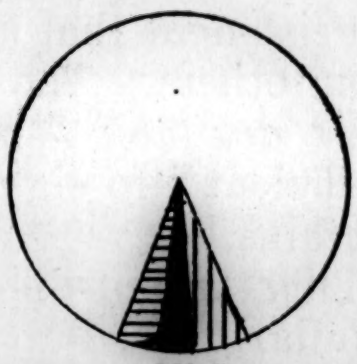
Carbohydrates.

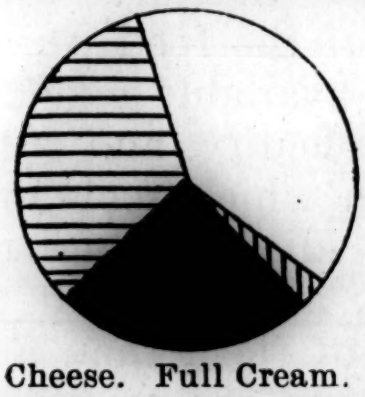
COMPOSITION OF FOODS GRAPHICALLY SHOWN.

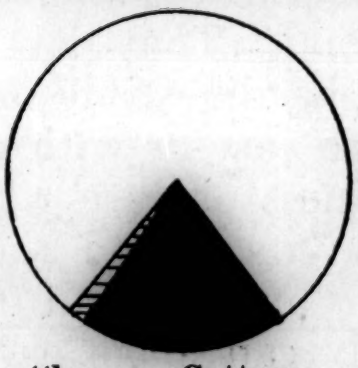

Lean Beef.

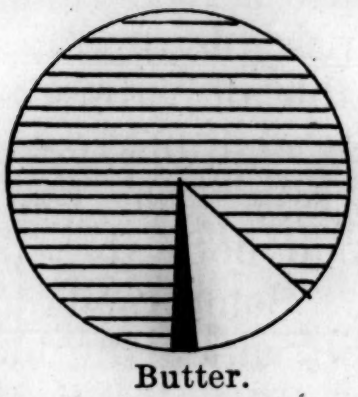

Eggs.

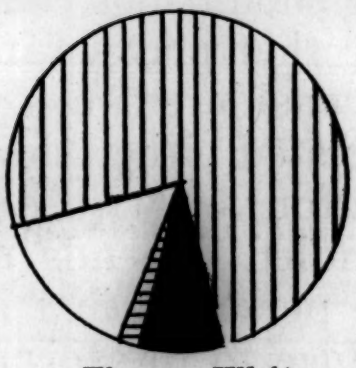

Fish.

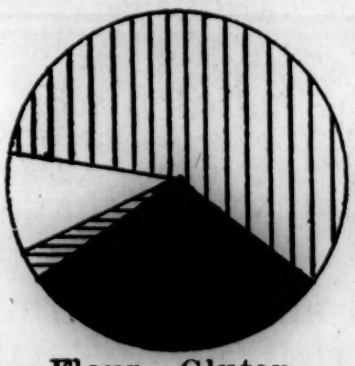

Milk.

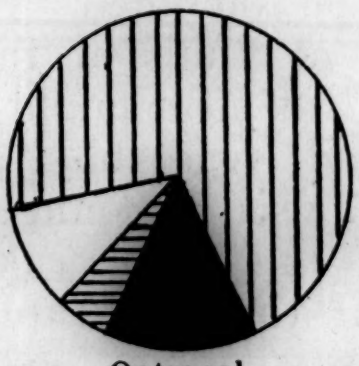

Cheese. Full Cream.

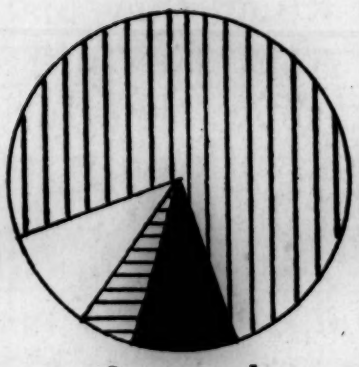

Cheese. Cottage.

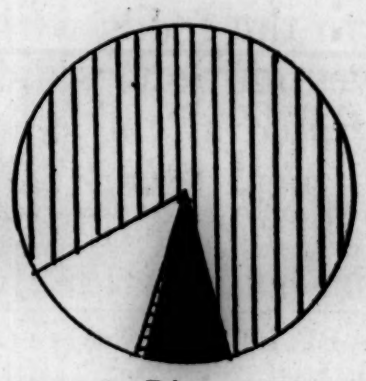

Butter.

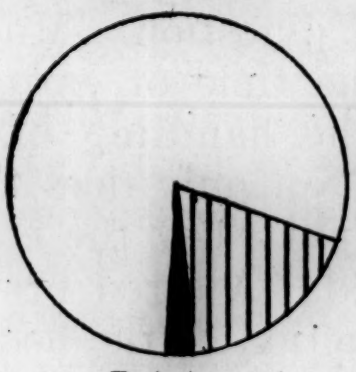

Flour. White.

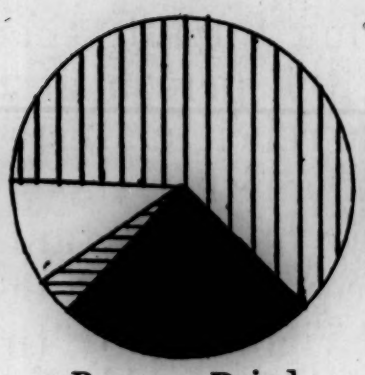

Flour. Gluten.

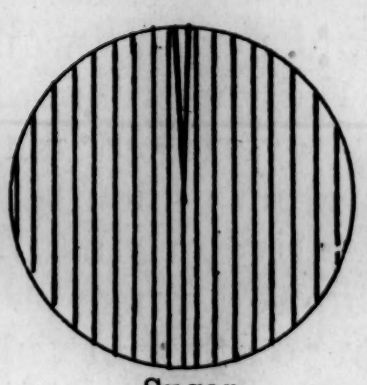

Oatmeal.


Cornmeal.

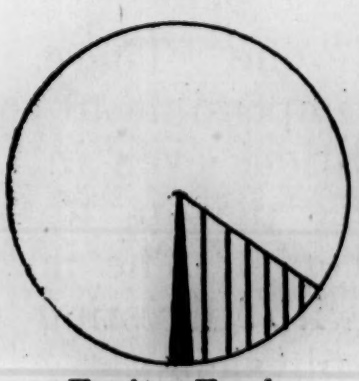

Rice.

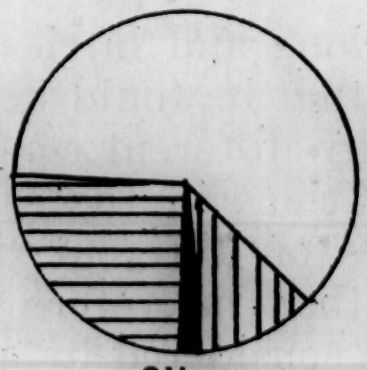

Potatoes.

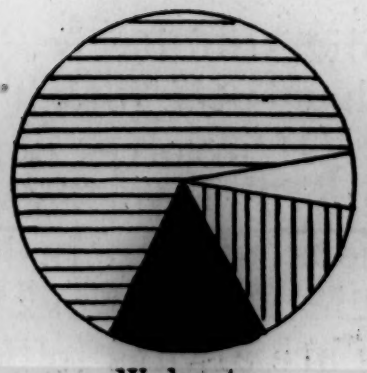

Beans. Dried.

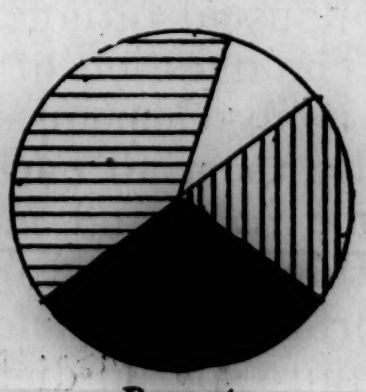

Sugar.

Bread. White.


Fruit. Fresh.


Olives.


Walnuts.


Peanuts.

DIGESTIBILITY OF FOODS.

M. E. JAFFA.

The chemical analysis of foods gives us the varying amounts of the different kinds of nourishing materials they contain. But these materials differ in regard to their digestibility, and differ in two distinct ways. One is, in regard to the proportion of nutrients that the average healthy person is able to extract or appropriate from them, without regard to any digestive peculiarity. We do not assimilate all of the nourishment that any food contains, but we get far less from some than from others. The amount that is *usually* assimilated is referred to as the *"available"* material. We sometimes use the words "digestion coefficient" to signify the *proportion* of available material that a food contains.

This kind of digestibility has no relation to the second kind, which is popularly used to denote foods that are difficult for the stomach to handle or which may cause distress or disturbances of different kinds. We should not confuse a food that requires a *long time to digest* with one that may be impossible of digestion. That part of the food which is considered in a table of values to be digestible or available may be digested either slowly or quickly, with ease or with difficulty, and with comfort or with distress. The readiness or ease with which fools are handled depends upon both the food itself and the idiosyncrasies of the person eating it. Some foods are by their nature more difficult to reduce to the form in which the body can make use of them than are other foods, but it is often due to the way in which they are prepared or to the foods with which they may be combined. For example, recent investigations show that two different kinds of fat can not be well digested at the same time; therefore, fat meat might be handled well at one meal when eaten with only bread, vegetables, and fruit, while it might not be digested the next time if used in connection with a mayonnaise salad, thickly buttered bread, and cream cake. As a rule, the fewer articles of food eaten at a meal, the more rapid and easy is their digestion. Another case in point is where a food that requires the action of the gastric juice is closely overlaid and surrounded by another food that is ready and perhaps waiting for intestinal digestion. Much also depends upon the condition of the person at the time of eating. A digestion already overtaxed may rebel against the handling of a food that would cause no difficulty at another time. Not only does the condition of the digestive organs play an important part, but the condition of the man himself must be equally considered. A tired brain and body are not apt to allow of full vigor of any function of the body, and the digestion suffers if this fact is not properly considered in times of unusual fatigue.

The question of digestibility is a long and intricate one. There are so many elements that enter into it that it would be impossible to consider them all here. It involves many different conditions even in the same food, and many varying conditions in the same person, to say nothing of the various idiosyncrasies of different people. The many morbid or pathological conditions that interefere with digestion or require special diets are always to be considered by a physician.

The psychological element plays a large part at times. The craving for a food and the enjoyment with which it is eaten certainly help in its digestion very often. But we should not confuse this condition with the other very different one of allowing appetite and desire to rule continually in the selection of food without regard to the laws of hygiene or moderation. Another psychological element, which is perhaps the converse of the first one, is the very depressing effect that constant fear and worry over the daily food often have upon the digestion. An over-consciousness concerning any organ is not beneficial to its condition. To be constantly afraid of what we eat, constantly in doubt, and always watching for results, is not conducive to general vigor and normal functions. When special needs must be considered, it is far better for any other than the person himself to be the one to consider them. If there is no one else to do so, then a careful decision should be made, lists of foods written out and the subject dropped from the mind as a problem, and the selected articles eaten in confidence and security of mind.

THE FAMILY TABLE.

M. E. Jaffa.

The home table is the "Mecca" toward which the traveler, the homeless, the restaurant frequenter, turns with longing eyes. But even this, best of all good places at which to eat, has some disadvantages. There is still something to be said in favor of the wider choice afforded by a meal that is served *à la carte*. The most attractive and best-cooked "home dinner" is not always adapted to the needs of all the people who gather about the board.

In the first place, the needs of the various members of the family are apt to differ very radically, and one person is often sacrificed to the demands or tastes of the others. It takes a great deal of time and thought to plan for the different members of an ordinary household. "Baby" usually fares well so long as the baby routine requires special dishes and different hours. But when she graduates into family routine the dishes that she partakes in common with the rest are not apt to be prepared according to her needs. They are seasoned and spiced and served with sauces to suit the adult table, and there is more variety than is good for her and an absence of "truly baby dishes." Her heaviest meal is apt to be at night, because the men folks must have their dinner at that time, even though her sleep be disturbed in consequence. Mother, too, is often too weary to digest a heavy meal in the evening, especially after preparing and serving it. She eats hurriedly in order to "catch up," because the first person served will soon be ready for a second helping, and because she does not wish to delay the coming of the dessert. She does not eat enough, and does not digest it perfectly because of the hurry and the weariness. How much better it would be if she and baby had a nourishing and substantial meal at noon when the dining-room was quiet and there was plenty of time to eat and when neither one was exhausted. It need not be an expensive meal or one difficult to prepare, for extra meals must be considered. How much better condition she would be in to consider the needs of the other members of the family when dinner time comes.

What are their needs? Father sits in the office all day and writes and thinks and directs and plans. He is tired, but hungry. His lunch at the restaurant has been trying to his digestion. Perhaps the bread was underbaked and the stew greasy. He needs food that is tempting in appearance, taste, and order—something fairly easily digested. His stomach shares in the general weariness of the body, but it will do its work properly if given something that stimulates the stomach muscles and the gastric glands, which are sympathetic to the sense of taste, odor, etc. The meat dish is apt to be more attractive in this way than the other things, and he eats heartily of it, even though he has had meat for lunch. Johnnie has been at school during the early part of the day, studying part of the time, and having a jolly time with the boys at recess. He has been out of doors three hours playing baseball and climbing fences and walking home. He is as hungry as a bear, and could be almost trusted to digest leather. Everything looks good and tastes good to Johnnie. The food requires no extra spices or flavors, no fancy touches to attract him. In fact, spices and peppers are distinctly bad for Johnnie. They are apt to stimulate into consciousness nerves that should be sound asleep with the rest of him in a couple of hours. But Johnny likes the meat as well as Father does, although Mother serves to him less in spite of his hints. She forgets that he ate a hasty lunch of rice and a banana, that he does not like milk, and that eggs have been too expensive for breakfast. She was brought up to believe that children ought not to have too much meat, but she has no definite idea of what constitutes "too much." She shakes her head at Johnnie when she sees him putting lumps of butter on his bread; she does not approve of excess. But Johnnie has been burning up fat during his baseball game; he needs to replenish the supply, and Johnnie is growing and needs growing material more than Father does. He can not get it all from one meal either, and it would often be beneficial to both parties if part of Father's plate went to Johnnie, and Johnnie's to Father, at every meal. More than that, grown people often allow themselves to partake of very *"indigestible"* dishes, while they conscientiously deny them to the children. It is frequently the case, however, that the children, who have no other strain upon their forces, could digest these dishes far more easily than can their parents; not that they are to be recommended for the use of children for that reason. And how about Aunt Jane? The doctor has forbidden her to eat meat, so she comes to the table and eats the other things. The ordinary dinner, *minus* the meat, is not a proper meal for her. *She* should have the glass of milk that Miss Elizabeth, aged 8, is drinking with her dinner, simply because she has not yet given up her baby habit of expecting and asking for milk with every meal. Elizabeth is average size, plump, and thriving. She is not growing rapidly, is not overactive, but has a large appetite. She eats everything that every one else eats, and probably does not require the milk. Aunt Jane needs it, but refuses it, not because she dislikes it or because it disagrees, but because she does not know that she needs it as a *food,* and prefers *tea as a drink.* Elizabeth has milk at noon, too, which makes a good meal with almost any other thing that Mother provides, although Mother and Johnnie have *only* had the "other thing," which is probably *not* enough for them. And thus it goes.

It is very important that the mother should keep in her mind these different needs and problems of the various members of the household. They can not *all* be considered always at each meal, but they should each have their turn at being carefully and thoroughly thought over and planned for. She must always remember that we can not properly consider the needs of any person at any meal without keeping in our minds what their other meals are. The lunch of a man who eats eggs for his breakfast is a different problem from the lunch for the man who has toast and coffee only.

The family dinner need not be a very intricate or complicated affair if the special needs of *some* members of the family are considered at other meals. A change in Johnnie's breakfast might make his dinner better suited to him; and a change in Aunt Jane's lunch might have a similar result for her. Thus a very little change at dinner might be all that is necessary to round out any needed reforms. Some other dish than the meat could be made especially tempting to Father, and the spices or condiments that he requires for digestive stimulants could be served separately in sauces, etc., so that the tastes of the younger members of the family would not be cultivated in this direction. Macaroni in place of potato would help out for Aunt Jane and Johnnie, and would not do an injustice to anybody; so would bean, pea, or lentil soup instead of beef soup help out in this way. Cheese and cup custards are easy extras to have on hand for the non-meat eaters and rapid-growers.

In planning a dinner for four or five people, we should learn to have a mental picture before us of (1) The classes of foods and what they do for us; (2) The needs of the people in general and in particular; (3) What their other meals have been or will be. Dinner is not necessarily the most important meal of the day. But, as all the members of the household do not, as a rule, eat all three meals at home, the evening dinner becomes the important factor in the daily dietary for many people and the one time when home is supposed to perform its primal function of ministering to the individual needs of the individual home-dweller.

FOOD FOR GROWING CHILDREN.

M. E. Jaffa.

There are two periods in the life of a child when the question of food, from the standpoint of pure *nourishment,* aside from its digestibility, is most important. These are the periods of rapid growth. We have come to know a great deal about the food for the first period, that of babyhood, especially since the chemical analysis of mothers' milk has furnished us with a perfect model upon which to base our selection of substitutes in artificial feeding of infants and for the year or two following infancy.

But the second period of rapid growth that comes early in the "teens" is not yet so generally understood. During these years of adolescence, when Nature is making every effort to develop and round out the perfect individual, she needs all the help we can give her. She can not build if we do not supply her with material, but she can, and often does, build one part at the expense of another. It is a common thing to hear a mother say, with reference to a child, that he "outgrew

his strength." Translated, that expression means that the child did not get, or was not able to use, sufficient food material to supply all the needs of the entire organism. When we stop to consider that practically every boy of twelve or fourteen exercises more than the average father and mother, is using his brain for study, and is growing rapidly besides, we see at a glance how much more food material he requires proportionally, and the question is, how to supply it. What kind does he need? *All kinds.* He needs protein "to grow on," to enlarge every tissue of his body as he builds up the frame of a man; and the other kind, the non-nitrogenous, to furnish heat and energy for his exercise and sports, and to round out his body with fat.

While he needs a large quantity of protein, he should not get it all from meat. Remember the meat substitutes and make good use of them at his "non-meat" meals. Give him milk and eggs and nuts and cheese—not all at one meal, however,—and macaroni and beans, lentils and peas, and he will not crave meat so inordinately as some growing boys do.

He needs a large quantity of carbohydrate—but do not expect him to get it *all* from starchy food. It is very bulky and requires one more process of digestion than sugar does. Do not be afraid of sugar. Remember that mothers' milk contains five per cent sugar and is a perfect food for a rapidly growing body. Give the girls and boys candy for dessert, nut candy especially, and use sugar in the cooking. It furnishes nourishment in a concentrated form. And *fat*—do not ignore it. Fat is worth two and one fourth times as much as starch or sugar for producing heat and energy. If meat fat does not agree, try cream or oil. See to it that he has a fair chance at each group of foods.

His instincts will lead him to choose the all-round diet that he needs, provided he has an opportunity of selection, but it will not lead him to the grocery store in search of some needed material. To limit his choice to a few articles is to tempt him to overuse the one that appeals to him the most. To regulate his diet entirely to the taste or fads of the "grown-ups" is to hamper him most cruelly. Grown people have the right to experiment as they will with their own food and carry out any pet theories on vegetarianism, raw food, etc. They may be on the right road, or they may find their error before great harm is done. But to make a mistake in food during the period of rapid growth and effort at maturing is to make a mistake that can not easily be remedied. It is often a case of "now or never," and the work that is not done in this second formative period of life may not be done at all. Weak spots in the building will always remain weak spots, and we should not run any risks at this time.

Many of the nervous symptoms usually observed during the period of adolescence are not necessary or normal. The nerves suffer from insufficient and improper nourishment, as well as from other wrong and unhygienic conditions during the early "teens."

If the child seems unable to handle the amount or kind of food that his age and growth seem to require, he should be relieved of all strain, all unnecessary demands on the reservoir of strength and energy, so that he may have a sufficient quantity to devote to the important process of digestion, assimilation and growth. No education obtained under such circumstances is worth the loss to the normal development of these years.

In providing meals for such cases some concentrated food should always be used in connection with the more bulky varieties. Fruits and vegetables have a hygienic as well as a nutritive value, and must never be ignored. Organic phosphates are very essential in growth, and care should be exercised in the cooking of vegetables in order that this valuable material reaches the table instead of being thrown out in the excess of water often used in the boiling process. Baked or steamed vegetables are better for this reason. Graham bread and bran coffee furnish these valuable phosphates also.

If parents were as thoughtful about the food of their children during the adolescent period as they are during the period of babyhood, we would not have so many inefficient men and women.

THE MEAT QUESTION.

M. E. Jaffa.

While the popular mind seems to be focused for the time on the subject of meat, it seems an appropriate moment to mention a few other facts that bear a close relation to it. The question of *meat* from the economic standpoint is one to be handled by economists, social leaders, and by the people as a body. But the question of meat from the standpoint of nutrition is a personal problem and must be met by the individual, or at best by the individual provider, in each individual home.

In eliminating meat from the daily dietary of those accustomed to partaking of it, it becomes necessary to provide proper and adequate substitutes. Many people may benefit by a temporary change of this kind, or even by a permanent one, but there is a large class of individuals to whom such a radical change might prove detrimental, unless proper thought and care are given to their needs.

Meat is one of the concentrated and easily digested foods in the class of proteids,—the class upon which we depend,—to build new tissues and to repair waste. Not all people can handle the different meat substitutes equally well, and they must be carefully selected. An average healthy adult with sound digestion can easily obtain the protein his system requires from beans and nuts and cheese, etc. But very young children and people with weak digestions can not be expected to digest beans and cheese. They would require different kinds of meat substitutes, milk and eggs, etc. Neither of these articles is *cheap protein* at present prices, and we are being prevented from buying "skim-milk," which is one of the best and cheapest forms in which we may obtain animal protein, by ordinances as foolish as they are unjust.

Skim-milk, properly labeled and sold at ten cents a gallon, as has often been done, is one of the best, cheapest, and most easily digested forms of protein that we have. We might as well prohibit meat being sold without its fat as milk without its cream, when we are using it as protein and not as a complete food. Skim-milk would be a boon in any family of small income. It can be used to great advantage in the cooking, or made into cottage cheese, besides being used as a drink. While the children of the poor are getting less protein than they require, many animals, such as pigs and calves, are being reared to a healthy and profitable maturity by the large use of skim-milk.

For present use of non-meat eaters, the following table may prove a useful guide. The housekeeper can see how much of other protein foods she must substitute for *each pound* of meat that she is giving up. It need not all be taken from *one* kind of food. Beans and eggs, or milk and eggs—or cheese and milk, etc., may be used. If the family has been in the habit of having three pounds of meat a day, they need three times that amount of any of the articles given below, or the given amount of three kinds,—to replace the meat.

1 pound of lean meat is equal to (protein alone is being considered) :

2½ quarts of skim-milk.
3 quarts of whole milk.
1 1-5 pounds uncooked old-fashioned oatmeal.
6-7 of a pound of dried beans.
5-7 of a pound of dried peas or lentils, or chick pea.
2-3 of a pound of full cream cheese.
1 pound of cottage cheese (fresh and moist).
10 or 12 eggs (rich also in fats, etc., not counted).
3-5 of a pound of shelled peanuts or pignolias.
1 pound of shelled almonds or walnuts.

It must always be remembered that foods vary in the amount of available protein. We do not assimilate all there is in any food, and, as a rule, the system appropriates less of the protein from beans, nuts, etc., than from the other foods on the list.

The above amounts are intended as guides merely; they are not to be considered as technically exact. It may be valuable to remember, in considering the above list, that milk and cheese and nuts have *none* of the elements that help to cause uric-acid troubles in the system. There are others, not found in this list, as bread and macaroni. Beans and peas and eggs have some purin bodies which are harmful elements, but not nearly as much as *meat,* or *fish* and *meat extracts.*

SOME POPULAR ERRORS.

M. E. Jaffa.

There are a number of theories on the subject of foods that seem to have gained a hold on the popular mind, although they have no real foundation in fact. Perhaps they have been accepted readily because they are pleasant to hold, or may make catering less difficult. It would be impossible to discuss many of them at this time, but some of the more common ones may serve as examples.

Coffee Substitutes—Mistaken ideas have arisen in the popular mind regarding the nutritive value of coffee substitutes. In the past, extravagant claims have been made for the nutritive value of decoctions prepared from these materials. On the label of one appears the statement that "it aids digestion, soothes and quiets worn and wasted nerves, and as a complexion beautifier can not be equaled. It tones the blood, and by its daily use will impart to the skin a healthy glow of youth." This label would be better suited to a patent medicine than to a food or drink and is as false as it is ridiculous. Another brand claims that it "nourishes, strengthens, and vitalizes." Let us see how much nourishment there is in these drinks. Skimmed milk is generally considered a pretty thin beverage, but comparing it with the coffee substi-

tutes, one would have to drink about nine pints of the infusion to get the amount of protein furnished by *one glass of* skimmed milk. The protein furnished by skimmed milk is to be preferred to that furnished by almost any other food. It must be remembered in this connection that in such statements the hygienic question of hot or cold drinks is not considered. Viewed from the nutritive standpoint alone, these coffee substitutes depend more, for their food value, upon the milk, cream, and sugar used than upon their own soluble constituents.

Predigested Foods—Many people think that it is advisable to use predigested foods in order to lessen the amount of work that the digestive organs have to do. This is only true in pathological conditions, where, for one reason or another, the digestive functions are impaired. In the case of a normal, healthy person, predigested foods should not be extensively used.

Each organ and gland of the body has a certain function to perform. If prevented from performing this function they are not apt to remain in a vigorous condition. The digestive juices must have material to work upon, or else they will either cause irritation by their presence, or cease to be secreted. Either condition is detrimental to health. It is not an infrequent experience to find that when ordinary food is resumed after a prolonged use of predigested ones that the normal secretions and ferments have so diminished as to make digestion very difficult.

This is also true of a too prolonged liquid diet, as milk, for instance. The adult stomach is intended to digest solid food, or a mixture of solid and liquid, and is often weakened by enforced inactivity through the use of liquids only.

White Bread vs. Whole Wheat Bread—There are many people who, through faulty information, hold to the belief that white bread contains very little, if any, of the nitrogenous materials, or protein, originally contained in the wheat—hence the *raison d'ètre* of the expression "White bread is the staff of death." The question has been fully investigated by the United States Department of Agriculture, and it has been conclusively shown that white bread contains about 9 per cent of protein, which is only 3 per cent lower than the figure given for either graham or whole wheat bread. On the other hand, extended experiments have shown that the protein of the white bread has a far higher digestion coefficient than has the protein of either whole wheat or graham bread. In other words, we do not get the advantage of much of the protein of the bran, which seems to be better digested by cows than by humans. We see, therefore, that the statements that are made disparaging to the use of white bread have no foundation in fact, as far as *nutritive value is concerned.*

There are, however, other elements to consider in this case. The "roughage" that we find in graham bread, due to the presence of the bran or hull, has a mechanical effect upon the intestine, which is valuable *when needed.* It stimulates, by a slight irritant effect, an intestinal wall that might otherwise be sluggish, and helps it to perform its function. This result is desirable if the irritation only brings the intestinal functions up to the normal; any action beyond that point would

not be desirable, as the food would be hurried along without proper time being allowed for the absorption of the nutrients by the alimentary canal.

There is a second advantage to the body from the use of graham or bran bread which is only lately beginning to be understood. The bran of wheat contains quite a percentage of organic prosphates, a valuable element. Recent scientific experiments upon cows have shown that many disturbances follow the feeding of bran from which the phosphates have been washed out by water. Cows digest bran far better than human beings can, but in spite of that difference, it is fair to suppose that the phosphates might be taken from the bran by the human system also, as they are easily soluble, even if the protein were comparatively unused. If this is true, then a drink made from bran would be most valuable to those who are in need of phosphates.

Breakfast Foods.—These foods have within the last decade come into very general use all over the country; they are put up in a very sanitary manner, and in general are attractive and palatable to most people. They possess many advantages over the foods which they are intended to replace, viz., the meals used for making "mush" or porridge. The latter require considerable time for preparation, while the former are ready for immediate use. It is doubtful, even with these advantages, if the "breakfast foods" would have come into such general use had it not been for the extravagant claims formerly made on the labels of the packages. The statements have been very greatly modified since the operation of the National Foods and Drugs Acts of June 30, 1906, and the different State Acts. To-day the labels are more in accordance with the facts of the case. One can now, by carefully scrutinizing the labels, arrive at an approximate idea of the value of these foods. This was, with reference to a good many of them, hardly possible three years ago.

In general, it may be said that these breakfast foods, or cereal foods, as they may be called, are made from the different grains—corn, wheat, oats, barley, rice, etc., and therefore the total nutriment contained in the prepared foods can not be any greater than was contained in the grains from which they are prepared. Any other statements appearing on the labels are misleading and deceiving. Wheat is used perhaps more than any other grain. At the same time, there are a number of these foods the preparation of which includes wheat and barley, and sometimes a combination of three grains. One claim that is made by some of the manufacturers of these foods is that they are more or less predigested, and that the starch is partly converted into sugar. The object of this partial conversion, or malting process, is to increase the ease of digestion of such carbohydrates. The conversion is never complete. Investigation shows that at the best only about one half, and, in a considerable number of cases, less than a quarter, of the total amount of starch present has been either fully or partly converted into sugar.

Perhaps some people having weak digestions might derive benefit from the use of these malted preparations as compared with the use of the ordinary mushes. But it could be safely said that with the average healthy person the nutrients of the so-called predigested, or malted,

products are no more thoroughly digested than those of the preparations which were not malted, and that the total nutriment contained in these preparations is not greater, either in protein content or fuel value, than the good old-fashioned oatmeal. It is also true that the available nutrients of the cereal breakfast foods are less than those of either graham, whole wheat, or white bread. It must not be thought from these statements that breakfast foods are not wholesome or nutritious, but they should be considered in accordance with their nutritive value and also from the standpoint of economy. Breakfast foods cost two or three times as much as the old-fashioned meals furnishing the same amount of nourishment.

COMMENTS.

Professor M. E. Jaffa, who has written the articles for this issue of the Bulletin, is recognized throughout the United States as an authority in the Science of Nutrition and its practical application to the dietary of man. But, in addition to coming from his pen, these articles have special interest and weight because of the collaboration of Mrs. M. E. Jaffa, who is a graduate physician and formerly a specialist in the diseases of children.

FOOD, FAD, AND FALLACY.

Some people say, "I never know I have a stomach;" some others say, "I never know I have anything else." The excellent series of articles in this issue should explain in many instances why these statements are so. In 1908 California buried 385 persons directly because of nutritional diseases, *i. e.*, diseases due entirely to faulty selection or assimilation of foods, exclusive of diseases caused by bacterial deterioration of foods. Osler's recent system of medicine defines the several diseases contributing to this total as follows:

Diabetes mellitus (256 deaths), defined as "a disorder of carbohydrate and fat metabolism . . . ."

Gout (88 deaths), defined as a "nutritional disorder characterized by disturbances in nitrogen metabolism . . . ."

Rickets (21 deaths), defined as presenting "many different views as to the etiology . . . but . . . the one determining cause is faulty feeding or faulty assimilation. Rickets is, in fact, a food disorder."

Obesity (17 deaths), defined as a "metabolic disorder commonly assuming the form of hyper-nutrition."

Scurvy (3 deaths), defined as "a general disorder of nutrition . . . ."

These 385 deaths mean very little except to those who know the picture of these diseases. Diabetes alone killed 256 after a probable average illness of twelve to fifteen years. These victims were largely men and women who, after qualifying for successful citizenship, found it necessary to limit their activities, and finally to stand aside and let others carry their part in the world's work. There is no greater tragedy than this, and it is not a matter of inconsequence to the rest of us. An annual death toll of 256 argues a total of 3,000 to 4,000 Californians invalided by this disease.

Consider what must happen in the early years of this and similar nutritious diseases. The patient knows he "is not right." He reads in the daily newspaper and magazine advertisements about others who have felt the way he does. They applied the simple, inexpensive cure advocated. He decides he will do something, and from the plentiful list

of free advisers he selects one to whom he writes. Thus begins the serial story of food and fad. The fallacy lies far back in his early years when both parent and teacher imagined that knowledge of foods and health just came "natural," and later his belief that he can use his "symptoms" like building blocks to spell the name of his disease and to order a "guaranteed cure."

AMERICAN SUBSTITUTES FOR CHLOROFORM IN THE OSLER THEORY.

When Professor Osler advanced his belief that men should retire from active business at the age of forty, and give the younger men a chance to learn administrative detail, he was making a plea against the American characteristic of "working oneself to death." His humorous reference to the desirability of chloroforming men at this age resulted in a nation-wide discussion of his "theory." Many columns of print were devoted to demonstrating what great financial prosperity and business advancement had been achieved by men after they had reached the age of forty. Prominent industrial and political leaders throughout the United States, who were nearing their three-score years and ten, were interviewed with reference to their accomplishments after the age of forty. These arguments were marshaled with telling force to show that both business interests and the public welfare would suffer by a general plan of retirement at the age of forty. Moreover, the testimony adduced demonstrated that great numbers of men do their best and original work after the time advocated by Dr. Osler for chloroforming them.

Yet in all these many discussions of the value of lives after the chloroform age there occurred no mention of the substitutes for chloroform which are in common use in most parts of the United States, in many instances being applied at a much earlier age than forty. The tuberculosis-substitute is thus administered to approximately five per cent of all American citizens before the age of forty—both men and women. The malaria-substitute is very widely utilized in California. No one can compute accurately the extent to which foods operate in the application of this theory, but few physicians would place the estimate lower than 20 per cent.

Professor Osler's "choloroform theory" was the means of a national expression of belief in the value of active participation in business after the age of forty. Every argument presented in support of this belief is a reason for fighting disease, which, unlike the chloroform, represents a serious condition, not the symbol of a theory.

THE NEW YEAR.

The new year's first month is the accepted time for good wishes, good resolutions, and for taking stock preparatory to getting down to business again on a sound basis. Few men realize that their personal health, the health of their families, and the health of the State are part of their stock in trade. The costs of sickness have to be figured in the price-mark, as well as the grocer's bill, the rent, and the employees' wages. A poor state of public health means high taxes, and high taxes have to be covered on the price-tag also.

It is true of every business that the cost of advertising must be paid by the consumer. When this advertising covers the billboards of the United States and the lithographed pages of thirty or forty national magazines, the consumer has something of a bill to pay. If old-fashioned cornmeal is just as good a food as a cereal whose advertising makes it cost twenty times as much, it is good business policy to buy the cornmeal, but only a buyer who *knows* can pursue this policy with safety.

The United States Government and the State Board of Health issue many valuable pamphlets dealing with matters of great importance in conserving the personal and public health. A partial list of such publications is printed on the last page.

In presenting the greetings of the season, the State Board of Health sincerely hopes that every citizen of California may become interested during the year in some phase of the great health movement which is sweeping over the country, and which is destined to confer such incalculable benefits on the next generation.

DEPARTMENT OF VITAL STATISTICS.

GEORGE D. LESLIE, STATISTICIAN.

Marriages.—The marriages reported for December number 2,189, as compared with 1,977 for the same month the year before. For an estimated State population of 2,037,929, the December total represents an annual rate of 12.6, against 12.4 for November.

The December totals were highest for the following counties: Los Angeles, 475; San Francisco, 383; Alameda, 249; Sacramento, 92; Santa Clara, 87; Orange, 76; Fresno, 74; San Joaquin, 60; and Marin, 56.

The aggregate for San Francisco and the other bay counties (Alameda, Contra Costa, Marin, and San Mateo) was 728.

Births.—For December there were reported 3,011 living births, representing an annual birth-rate of 17.4 per 1,000 population, as compared with 15.4 for the preceding month. The corresponding total for the same month the year before was 2,639.

The totals were highest for the following counties: Los Angeles, 613; San Francisco, 537; Alameda, 309; Santa Clara, 144; Fresno, 111; Sacramento, 106; San Bernardino, 92; Orange and San Joaquin, each 67; Butte, 59; Siskiyou, 58; Fresno, 54; Sonoma, 51; and Stanislaus, 50.

Altogether, 1,675 births were registered in the twenty-six freeholders' charter cities, the leading cities being as follows: San Francisco, 537; Los Angeles, 388; Oakland, 168; Berkeley, 76; Sacramento, 65; San Jose, 47; Pasadena and San Diego, each 43; Alameda, 41; Stockton, 39; Fresno, 28; and Long Beach, 27.

The aggregate for San Francisco and the transbay cities (Alameda, Berkeley, and Oakland) was 822, and for San Francisco and the other bay counties was 949. Similarly, the total for Los Angeles and neighboring chartered cities (Long Beach, Pasadena, and Santa Monica) was 468, and for the entire county was 613.

Deaths.—Exclusive of stillbirths, altogether 2,980 deaths were reported for December, this number including 192 delayed certificates for deaths in November or earlier months. The 2,980 deaths give an annual death rate of 17.2 for December, against 15.6 for the month before. The corresponding total for the same month in the preceding year was 2,856.

The December death totals were highest for the following counties: Los Angeles, 628; San Francisco, 569; Alameda, 282; Sacramento, 117; Santa Clara, 100; San Bernardino, 98; San Joaquin, 94; Fresno, 88; San Diego, 70; Sonoma, 61; Shasta, 56; and Riverside, 52.

There were altogether 1,726 deaths in the twenty-six chartered cities, the highest totals being as follows: San Francisco, 569; Los Angeles, 403; Oakland, 149; Sacramento, 74; San Diego, 65; Stockton, 58; Pasa-

dena, 51; Berkeley, 40; Alameda, 36; Fresno, 35; Riverside, 34; and San Bernardino and San Jose, each 30.

The aggregate for the urban district (San Francisco and the trans-bay cities) was 794, and for the entire metropolitan area (San Francisco and the other bay counties) was 932. Similarly, the total for Los Angeles and neighboring chartered cities was 487, and for the whole county was 628.

Causes of Death.—For December there were reported 519 deaths, or 17.4 per cent of all, from diseases of the circulatory system, and 421, or 14.1 per cent, from various forms of tuberculosis, heart disease thus leading tuberculosis as in recent months.

Other notable causes of death in December were as follows: Diseases of the respiratory system, 381; violence, 283; diseases of the nervous system, 278; diseases of the digestive system, 245; cancer, 190; Bright's disease and nephritis, 173; and epidemic diseases, 141.

Typhoid fever, as usual, led among epidemic diseases with 52 deaths, against 25 for diphtheria and croup, 17 for whooping cough, 12 for malaria fever, 11 for influenza, and 24 for all other epidemic diseases.

The 52 deaths from typhoid fever occurred in the following counties: Los Angeles, 7; San Bernardino, 6; Fresno and San Francisco, each 4; Sacramento, San Joaquin, and Shasta, each 3; Kern, Lake, Orange, Santa Clara, and Tulare, each 2; and Alameda, Butte, Humboldt, Kings, Mariposa, Mendocino, San Mateo, Santa Barbara, Santa Cruz, Stanislaus, Tuolumne, and Ventura, 1 each.

Further particulars appear in the following table:

Deaths from Certain Principal Causes, with Proportion per 1,000 Total Deaths for Current and Preceding Month, for California: December.

Cause of Death.	Deaths: December.	Proportion per 1,000.	
		December.	November.
ALL CAUSES	2,980	1,000.0	1,000.0
Typhoid fever	52	17.4	16.8
Malarial fever	12	4.0	4.6
Measles	9	3.0	1.2
Scarlet fever	5	1.7	1.9
Whooping-cough	17	5.7	3.8
Diphtheria and croup	25	8.4	10.0
Influenza	11	3.7	1.5
Other epidemic diseases	10	3.3	4.2
Tuberculosis of lungs	367	123.2	135.9
Tuberculosis of other organs	54	18.1	19.1
Cancer	190	63.8	56.3
Other general diseases	98	32.9	37.1
Meningitis	28	9.4	9.6
Other diseases of nervous system	250	83.9	76.6
Diseases of circulatory system	519	174.2	155.4
Pneumonia and broncho-pneumonia	286	96.0	74.3
Other diseases of respiratory system	95	31.9	28.7
Diarrhea and enteritis, under 2 years	82	27.5	43.3
Diarrhea and enteritis, 2 years and over	23	7.7	9.6
Other diseases of digestive system	140	47.0	48.6
Bright's disease and nephritis	173	58.0	68.9
Childbirth	39	13.1	12.3
Diseases of early infancy	76	25.5	28.3
Suicide	58	19.5	19.1
Other violence	225	75.5	78.5
All other causes	136	45.6	54.4

Geographic Divisions.—Data for geographic divisions, including the metropolitan area, or "Greater San Francisco," are as follows:

Deaths from Main Classes of Diseases, for Geographic Divisions: December.

Geographic Division.	Deaths: December.										
	All Causes	Epidemic Diseases	Tuberculosis (All Forms)	Cancer	Diseases of Nervous System	Diseases of Circulatory System	Diseases of Respiratory System	Diseases of Digestive System	Bright's Disease and Nephritis	Violence	All Other Causes
THE STATE	2,980	141	421	190	278	519	381	245	173	283	349
Northern California	380	22	35	20	59	68	49	23	12	41	51
Coast counties	182	8	16	10	42	21	28	12	9	15	21
Interior counties	198	14	19	10	17	47	21	11	3	26	30
Central California	1,660	76	219	121	135	297	214	141	101	158	198
San Francisco	569	20	70	61	39	104	76	42	37	52	68
Other bay counties	363	9	49	25	34	69	43	33	21	38	42
Coast counties	198	9	34	10	11	39	21	18	21	11	24
Interior counties	530	38	66	25	51	85	74	48	22	57	64
Southern California	940	43	167	49	84	154	118	81	60	84	100
Los Angeles	628	23	109	39	52	104	81	57	45	52	66
Other counties	312	20	58	10	32	50	37	24	15	32	34
Northern and Central California	2,040	98	254	141	194	365	263	164	113	199	249
Metropolitan area	932	29	119	86	73	173	119	75	58	90	110
Rural counties	1,108	69	135	55	121	192	144	89	55	109	139

DEPARTMENT OF BACTERIOLOGY.

DR. A. R. WARD, DIRECTOR.

EXAMINATIONS MADE DURING DECEMBER, 1909.

	Ex.-Pos.	Ex-Neg.	Total.
Diphtheria	7	31	38
Malaria	--	1	1
Tuberculosis	3	9	12
Typhoid	6	8	14
Water	--	--	--
Miscellaneous	--	--	6
Rabies	4	--	4
Total			75

DEPARTMENT OF PURE FOODS AND DRUGS.

PROFESSOR M. E. JAFFA, DIRECTOR.

VINEGAR AND THE PURE FOOD LAW.

There has recently been received at the Laboratory, from manufacturers of vinegars, statements to the effect that the manufacturers have been told that merchants are not allowed to buy the vinegar unless it has "pure food law" stamped on the barrel. In accordance therewith, this Laboratory has been in receipt of requests for such stamps.

In answer to the above, it may be said that the Pure Food Law of California does not require any stamps to be placed on any food containers. The law requires that vinegar shall, when exposed or offered for sale, meet the requirements of the standards for the respective vinegars sold. The standards for vinegar may be had upon application to the Director of the State Food and Drug Laboratory, University of California, Berkeley, Cal.

There is issued by the United States Department of Agriculture a serial number in connection with the filing of a general guaranty with the department. This serial number is used on labels with the words "Guaranteed by (here insert name of guarantor) under the Food and Drugs Act, June 30, 1906." This guaranty and serial number are not required by law, but are oftentimes considered quite desirable for a manufacturer to have. No guaranty will be filed by the State Board of Health or its Secretary, and no serial number will be given by this Board or its Secretary. All general guaranties must be filed with the Secretary of Agriculture, Washington, D. C.

Full particulars concerning the form of guaranty, etc., can also be had upon application to the State Laboratory.

A CAUTION TO BUTCHERS.

It has been ascertained by correspondence and personal interviews that butchers are using in good faith certain compounds for preserving meat, thinking that the said compounds are in conformity with the law. It is very necessary for butchers when buying any preserving material to get a guaranty in writing from the seller to the effect that the said preservative does not contain any compounds prohibited by the law. The use of a preservaline containing sulphur dioxide compound is prohibited by law from being used in meats intended for human consumption.

NOTICE OF JUDGMENTS.

No. 112. *Misbranding of a drug product.* (Quinine-whisky.)

The facts in the case were as follows:

On or about December 16, 1908, an inspector of the Department of Agriculture found in the possession of Stein Brothers, 20 Michigan avenue, Chicago, Ill., a shipment of ten cases of "quinine-whisky" which had been shipped to the said Stein Brothers on December 16, 1908, by the Quinine-Whisky Company, from Louisville, Ky. A sample of this preparation was collected by the inspector and analyzed in the

Bureau of Chemistry, United States Department of Agriculture, and it was found that the preparation was misbranded within the meaning of section 8 of the act, as stated in the libel as follows:

1. That the said divers cases of quinine-whisky, to wit, to the number of ten, each containing one dozen bottles, contain a drug which is misbranded in violation of section 8, paragraph 2, of the Food and Drugs Act, 34 Statutes at Large, 769; that is to say, the label upon the wooden case and the cardboard carton (the latter enclosing each one of the twelve bottles in the aforesaid wooden case) bears no statement of the alcoholic content of the aforesaid product, to wit, quinine-whisky, and the aforesaid product, to wit, quinine-whisky, is further misbranded in that the label attached to each bottle declares that the medicine contains pure quinine, one and one-fourth grains per ounce, whereas in truth and in fact the medicine contains only one twenty-fourth grain of alkaloidal material to the ounce, this material not being entirely quinine but mixed alkaloids and cinchona bark. And the aforesaid product, to wit, quinine-whisky, is further misbranded in violation of section 8 of the Food and Drugs Act in that the label bears misleading statements, among which are the following:

"The greatest preventative and remedy for all malarial complaints ever offered," "Prevents and cures a cold," "The greatest tonic for convalescents from typhus and typhoid fever," "An infallible cure for la grippe."

On December 19, 1908, the Secretary of Agriculture reported the facts to the United States attorney for the northern district of Illinois, who forthwith filed a libel for the seizure and condemnation of said goods.

No. 113. *Misbranding of flour.* (Underweight.)

The facts in the case were as follows:

On or about March 15, 1909, an inspector of the Department of Agriculture found in the possession of W. C. Brewer & Co., Wake Forest, N. C., 300 one-fourth barrels, 20 one-half barrels, and 120 one-eighth barrels of flour, which had been shipped to the said W. C. Brewer & Co. by the Riverton Mills Company, Riverton, Va., on February 6, 1909, the sacks containing the same being labeled, "⅛ barrel," "¼ barrel," and "½ barrel." The inspector weighed the entire shipment and found the average weight of the one-eighth barrel sacks to be 24 pounds, of the one-fourth barrel sacks, 48 pounds, and of the one-half barrel sacks, 96.2 pounds, making a total shortage of approximately 2 per cent. The Secretary of Agriculture on March 15, 1909, reported these facts to the United States attorney for the eastern district of North Carolina, who filed a libel for seizure and condemnation of the flour under section 10 of the act.

No. 114. *Misbranding of canned apricots.* (Underweight.)

The facts in the case were as follows:

On or about May 6, 1909, an inspector of the Department of Agriculture located in the possession of the Washington Grocery Company, Bellingham, Wash., 100 cases (each containing 12 packages) of apricots labeled "One dozen gallons Bayside Brand California Pie Apricots, Bayside Canning Company, Alviso, California." A representative number of packages were measured in the Bureau of Chemistry, United States Department of Agriculture, and found to contain only three-fourths of 1 gallon each.

The facts were reported by the Secretary of Agriculture to the United States attorney for the western district of Washington on May 6, 1909, and a libel for seizure and condemnation was duly filed.

No. 115. *Adulteration and misbranding of lemon extract.* (Imitation colored with a coal-tar dye.)

The facts in the case were as follows:

On February 21, 1908, an inspector of the United States Department of Agriculture purchased from the firm of Van Cleave Brothers, Ocean Springs, Miss., a sample of lemon extract labeled "Momus N. B. Co. (Ltd.), Double Extract Lemon for Cakes, Pastry, etc. Nicholas Burke Co. (Ltd.), New Orleans, La.," which had been manufactured and shipped by the Nicholas Burke Company (Limited), from New Orleans, La., to the said firm on or about June 3, 1907. The sample was subjected to analysis in the Bureau of Chemistry of the United States Department of Agriculture, and the following results obtained and stated:

Specific gravity at 15.5° C.	0.99153
Alcohol by volume (per cent)	7.64
Solids, in extract (gram per 100 cc.)	.87
Lemon oil by polarization	None.
Lemon oil by precipitation	None.
Citral (per cent by weight)	.02
Color, coal-tar dye.	

In the opinion of the Department of Agriculture, lemon extract is the flavoring extract prepared from oil of lemon or from lemon peel, or both, and contains not less than 5 per cent by volume of lemon oil. It was evident that the product was both adulterated and misbranded within the meaning of sections 7 and 8 of the act; adul-

terated because it contained little or no lemon oil and because it was an imitation extract colored with a coal-tar dye to give it the color of genuine lemon extract, thereby concealing inferiority; and misbranded because labeled "Double Extract Lemon," whereas it contains little or no lemon extract.

On March 23, 1909, the facts were reported by the Secretary of Agriculture to the Attorney General and the case was referred to the United States attorney for the eastern district of Louisiana, who filed information against the Nicholas Burke Company (Limited).

No. 116. *Adulteration and misbranding of stock feed.* (Low protein and fat content.)

The facts in the case were as follows:

On February 13, 1908, an inspector of the Department of Agriculture purchased from Hill & Watson, Amsterdam, N. Y., a sample of stock feed labeled and branded, "100 lbs. Michigan Gluten Feed, 25% protein, 3% fat. Michigan Starch Co., Traverse City, Michigan." The sample was part of a consignment shipped by the Michigan Starch Company from Traverse City, Mich., to John A. Becker, Albany, N. Y., and subsequently sold by him to Hill & Watson. This sample was subjected to analysis in the Bureau of Chemistry, United States Department of Agriculture, and the following results obtained and stated:

	Per cent.
Moisture	7.45
Fat	2.89
Protein	18.25

It was apparent that the article was misbranded within the meaning of section 8 of the act, because it was labeled, "25% protein, 3% fat," whereas the analysis showed that it contained only 18.25 per cent of protein and 2.89 per cent of fat.

The Secretary of Agriculture having afforded the manufacturer an opportunity to show any fault or error in the findings of the analyst, and it having failed to do so, the facts were, on January 11, 1909, reported to the Attorney General and the case referred to the United States attorney for the western district of Michigan, who filed an information against the said Michigan Starch Company.

No. 117. *Adulteration and misbranding of stock feed.* (Low protein and fat content.)

The facts in the case were as follows:

On January 30, 1908, an inspector of the Department of Agriculture purchased from J. H. Peters' Sons, Albany, N. Y., a sample of stock feed labeled and branded "Michigan Starch Co., Traverse City, Michigan, 100 lbs., Gluten Feed, 25% Protein, 3% Fat." The sample was part of a consignment shipped by the Michigan Starch Company from Traverse City, Mich., to John A. Becker, at Albany, N. Y., and subsequently sold by him to J. H. Peters' Sons. This sample was subjected to analysis in the Bureau of Chemistry, United States Department of Agriculture, and the following results obtained and stated:

	Per cent.
Moisture	9.32
Fat	2.48
Protein	23.31

It was apparent that the article was misbranded within the meaning of section 8 of the act, because it was labeled "25 per cent protein, 3 per cent fat," whereas the analysis showed that it contained only 23.31 per cent of protein and 2.48 per cent of fat.

The Secretary of Agriculture having afforded the manufacturer an opportunity to show any fault or error in the findings of the analyst, and it having failed to do so, the facts were, on January 11, 1909, reported to the Attorney General and the case referred to the United States attorney for the western district of Michigan, who filed an information against the said Michigan Starch Company.

No. 118. *Adulteration and misbranding of buckwheat flour.* (As to presence of wheat and corn products.)

The facts in the case were as follows:

On March 27, 1908, an inspector of the Department of Agriculture purchased from M. M. Terry & Co., Dayton, Ohio, a sample of a food product, the package containing which was labeled on one side "O. P. T. Self-Rising Buckwheat Compound Flour" and on the other side "Compound Buckwheat O. P. T. Flour. Ela Manufacturing Company, Bloomington, Ill." This sample was part of a shipment made by the Ela Manufacturing Company from Bloomington, Ill., to M. M. Terry & Co., on or about February 27, 1908. The sample was examined in the Bureau of Chemistry, Department of Agriculture, and found to contain a considerable quantity of wheat and corn products. It was apparent, therefore, that the article was both adulterated and misbranded; adulterated because wheat and corn products had been substituted in part for the buckwheat flour, and misbranded because the packages containing it were labeled in such manner as to indicate that they contained a compound of buckwheat flour, whereas a large quantity of wheat and corn flour had been mixed and packed with the same.

The Secretary of Agriculture having, on October 5, 1908, afforded the manufacturers an opportunity to show any fault or error in the aforesaid examination, and they having failed to do so, the facts were reported to the Attorney General on January 25, 1909, and the case referred to the United States attorney for the southern district of Illinois, who filed an information against the said Ela Manufacturing Company.

No. 119. *Adulteration and misbranding of a stock feed.* (Globe flour middlings.) (As to presence of ground corncobs.)

The facts in the case were as follows:

On or about February 23, 1909, an inspector of the Department of Agriculture found at Buffalo, N. Y., a consignment of stock feed awaiting shipment to Genesee, Pa., contained in sacks of 100 pounds, each sack bearing a tag label reading "100 lbs. Globe Flour Middlings, Protein 11 to 13%, Fat 3 to 4%, Crude Fiber 13-15, Globe Elevator Company, Buffalo, N. Y." A sample taken from this consignment was examined in the Bureau of Chemistry, United States Department of Agriculture, and found to contain approximately 10 per cent of ground corncobs. The product was, therefore, adulterated in that ground corncobs had been substituted in part for said Globe middlings, and misbranded in that the sacks containing the same were labeled so as to indicate that the contents were made entirely from wheat, whereas they also contained about 10 per cent of ground corncobs. This consignment was later found by the inspector in the possession of E. P. Daily at Genesee, Pa., and on March 3, 1909, the facts were reported by the Secretary of Agriculture to the United States attorney for the middle district of Pennsylvania, and libel for seizure and condemnation was duly filed.

No. 120. *Adulteration and misbranding of pepper.* (As to presence of wheat meal, seedcoats, cocoanut shells, etc.)

The facts in the case were as follows:

On July 29, 1907, an inspector of the Department of Agriculture purchased in Kansas City, Kans., a sample of a product purporting to be ground pepper. This sample formed part of a shipment made by Long Brothers Grocery Company, Kansas City, Mo., to W. M. Koffler, Kansas City, Kans., on or about May 16, 1907. The sample was subjected to analysis in the Bureau of Chemistry, United States Department of Agriculture, and it was found that a number of adulterants were present, of which wheat meal and one or two tissues, probably seedcoats, were most numerous, and in smaller amounts were flaxseed meal, buckwheat flour, cocoanut shells or tissues of similar character, traces of luguminous seed, coffee, and red pepper. It was apparent that the article was both adulterated and misbranded within the meaning of sections 7 and 8 of the act; adulterated because other substances had been mixed with the pepper so as to reduce, lower, and injuriously affect its quality and strength, and misbranded in that it purported to be ground pepper, when, as a matter of fact, analysis showed that it consisted of ground pepper and a mixture of other substances.

The Secretary of Agriculture, having, on December 5, 1907, afforded the manufacturers an opportunity to show any fault or error in the aforesaid analysis, and they having failed to do so, the facts were duly reported to the Attorney General and the case referred to the United States attorney for the western district of Missouri, who filed an information against the said Long Brothers Grocery Company.

No. 121. *Misbranding of mineral water.* (As to quality.)

The facts in the case were as follows:

On or about May 28, 1909, an inspector of the Department of Agriculture discovered in the Camden warehouses at Baltimore, Md., 34 cases (each containing 2 dozen bottles) of mineral water labeled and branded "2 Doz. Qts. Pluto Concentrated Mineral Water." These cases had been shipped to the Camden warehouses by the French Lick Springs Hotel Company from French Lick, Ind., on or about April 12, 1909. A number of the bottles, examined in the Bureau of Chemistry, Department of Agriculture, proved to be of short measure, containing on the average 1.6 pints each. The water was, therefore, misbranded under section 8 of the act, and on May 28, 1909, the facts were reported by the Secretary of Agriculture to the United States attorney for the district of Maryland, and libel for seizure and condemnation was duly field.

No. 122. *Adulteration and misbranding of strawberry extract.* (An imitation colored with a coal-tar dye.)

The facts in the case were as follows:

On or about April 16, 1908, an inspector of the United States Department of Agriculture purchased from R. Tuminello, Magnolia, Miss., a sample of strawberry extract labeled "Crown Extract of Strawberry. Prepared by Phoenix Extract Company, New Orleans, La.," which had been manufactured and shipped by King Brothers, Shilstone & Saint (Limited), New Orleans, La., to the said dealer on or about October 18, 1907. The sample was subjected to analysis in the Bureau of

Chemistry, United States Department of Agriculture, and the following results obtained and stated:

Specific gravity (15.5° C.)	0.9952
Solids (grams per 100 cc.)	3.79
Alcohol, by volume (per cent)	15.52
Esters, as amyl acetate (per cent)	.86
Color	Coal-tar dye.

It was evident that the product was both adulterated and misbranded within the meaning of sections 7 and 8 of the act; adulterated because it was not made from the strawberry fruit, but was an article artificially made and colored in imitation of strawberry extract; and misbranded because labeled "Extract of Strawberry," whereas it was an imitation of the genuine strawberry extract and was offered for sale and sold under the distinctive name of the genuine article.

The Secretary of Agriculture having, on October 18, 1908, afforded the manufacturers an opportunity to show any fault or error in the aforesaid analysis, and they having failed to do so, the facts were reported to the United States attorney for the eastern district of Louisiana, who filed an information against King Brothers, Shilstone & Saint (Limited), with the result hereinbefore stated.

The following is a list of the persons accused, the foods found to be adulterated or mislabeled, and the nature of the offenses, which were included in the report of the Director of the State Laboratory to this Board on January 19, 1910. These persons were afforded an opportunity to be heard before this Board, as provided in said act, on February 5, 1910, and after such hearing, the findings of the Director being sustained, these cases were referred to the district attorneys of the several counties for prosecution:

Certificate No.	Material.	Violation.	Name of Dealer.	Locality.
757	Chopped meat	Adulterated with sulphur dioxide	George Kaphan	Oakland
758	Chopped meat	Adulterated with sulphur dioxide	A. Weber & Son	Oakland
760	Prepared Mustard	Mislabeled. Contains tumeric	J. L. Debenedetti	So. San Fran.
763	Extract Raspberry	Mislabeled. Coal-tar color	A. Sutherland	Oakland
769	Pullet eggs	Mislabeled. Not fresh	A. Fijalkowsky	Berkeley
770	Eggs	Mislabeled. Not fresh	J. Zafeiris	Los Angeles
771	Tomato catsup	Mislabeled. Contains benzoates	F. E. Miyakawa	Los Angeles
772	Tomato catsup	Mislabeled. Contains benzoates	J. L. Westrem	Los Angeles
773	Tomato catsup	Mislabeled. Contains benzoates	T. Nozaki	Los Angeles
774	Honey, extd.	Adulterated with glucose	James Hoey	Martinez
775	Ranch eggs	Mislabeled. Not fresh	Geo. F. Mackay	Ocean Park
776	Eggs, eastern	Mislabeled. Not fresh	H. G. Springham	Los Angeles
777	Eggs, fancy	Mislabeled. Not fresh	S. G. Davis	Los Angeles
778	Eggs, fancy	Mislabeled. Not fresh	Johnson & Hersman	Alhambra
779	Eggs, ranch	Mislabeled. Not fresh	K. H. Altoon	Los Angeles
780	Eggs, ranch	Mislabeled. Not fresh	Z. W. Luck & Son	Los Angeles
781	Eggs, Columbia	Mislabeled. Not fresh	L. C. Chick	Sherman
782	Mustard	Adulterated and mislabeled. Contains tumeric and cereal	J. W. Wallop	Anaheim
783	Allspice	Adulterated with cereal	A. Horowitz	Los Angeles
785	Ground must'rd	Adulterated with cereal	Piru Co-op. Assn.	Piru
786	Eggs, fresh	Mislabeled. Not fresh	Main Market and Produce Co.	Los Angeles
787	Ground must'rd	Adulterated. Deficient in essential ingredients	T. M. Purdon & Co.	Santa Ana

List of Persons Accused and Nature of the Offenses—Continued.

Certificate No.	Material	Violation.	Name of Dealer.	Locality.
788	Ground must'rd	Adulterated with cereal and curcuma	Chas. C. Flint	Los Angeles
792	Extract lemon	Adulterated. Below standard	Stetson Barret Co.	Los Angeles
793	Butter	Mislabeled. Short weight	W. H. Poston & Co.	Pomona
794	Chopped meat	Adulterated with sulphur dioxide	Ophir Meat Market	Oroville
796	Catsup	Mislabeled. Contains benzoates	Old Central Rest'rant	Los Angeles
797	Catsup	Mislabeled. Contains benzoates	S. Rosenberg	Los Angeles
798	Catsup	Mislabeled. Contains benzoates	Jos. Wallos	Los Angeles
799	Relish, celery	Mislabeled. Contains benzoates	E. O. Wentworth	Los Angeles
800	Extract lemon	Adulterated. Below standard lemon oil	F. A. Slick	Monrovia
801	Extract lemon	Adulterated and mislabeled. Coal-tar color. Below standard lemon oil	R. H. Jeffries	Los Angeles
802	Ham loaf	Adulterated. Contains boron comp.	Leo Mayer	Los Angeles
805	Prepared mustard	Mislabeled. Contains tumeric	Keniston & Dinsmore	Pasadena
807	Spice, cloves	Adulterated with foreign starch, crude fiber	J. Swayne	Los Angeles
808	Syrup, Grenadine	Mislabeled. Artificial color	A. J. Charle	Pomona
809	Liquid, cream	Adulterated. Below standard milk fat	Mike Obradovich	Berkeley

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DEPARTMENT OF EPIDEMIOLOGY.

WILLIAM F. SNOW.

The following foci of communicable diseases have been reported to the Secretary during December, 1909:

Smallpox	8
Diphtheria	8
Scarlet fever	8
Typhoid fever	6

The State Board of Health made the following ruling at its meeting December 6, 1909:

Resolved, by the State Board of Health of the State of California, that all cases of diphtheria shall be kept in quarantine until two negative bacteriological cultures are determined.

FARMERS' BULLETINS ON HUMAN FOODS.

The following bulletins can be obtained free upon application to the Secretary of Agriculture, Washington, D. C. When making application for them, kindly state that they belong to the Farmers' Bulletin Series:

No. 34. Meats: Composition and Cooking.
42. Facts about Milk.
85. Fish as Food.
93. Sugar as Food.
112. Bread and Bread Making.
121. Beans, Peas, and Other Legumes as Food.
128. Eggs and Their Uses as Food.
131. Household Tests for Detection of Oleomargarine and Renovated Butter.
142. Principles of Nutrition and Nutritive Value of Food.
175. Home Manufacture and Use of Unfermented Grape Juice.
182. Poultry as Food.
203. Canned Fruits, Preserves, and Jellies.
249. Cereal Breakfast Foods.
252. Maple Sugar and Syrup.
256. Preparation of Vegetables for the Table.
293. Uses of Fruit as Food.
332. Nuts and Their Uses as Food.
348. Bacteria in Milk.
356. Peanuts.
359. Canning Vegetables in the Home.
363. The Use of Milk as Food.
375. Care of Food in the Home.
377. Harmfulness of Headache Mixtures.

CALIFORNIA STATE BOARD OF HEALTH

LIST OF PUBLICATIONS FOR FREE DISTRIBUTION

REGULAR PUBLICATIONS

1. Bulletin, published monthly (back numbers on request).
2. Biennial Report, next report June 30, 1910 (back numbers on request).

SPECIAL PUBLICATIONS

3. California Pure Foods and Drugs Acts, 1909, with Rules and Regulations, Standards of Purity, and Decisions rendered by Secretary of Agriculture. Indexed.
4. General Health Laws of the State of California, 1909. Indexed, with alphabetical references to other statutes and sections relating to the subject.
5. Law for Registration of Vital Statistics in California, 1905. Amended by Chapters 92 and 236, Statutes of 1907.

PARTIAL LIST OF CITY HEALTH OFFICERS.

Alameda.....Dr. L. W. Stidham
Alhambra.....Dr. F. E. Corey
Alturas.....Dr. John Stile
Anaheim.....Dr. J. L. Beebe
Antioch.....E. C. Worrell
Azusa.....Dr. S. A. Ellis
Berkeley.....Dr. J. J. Benton
Biggs.....Dr. B. Caldwell
Black Diamond.....Dr. F. S. Gregory
Bakersfield.....J. E. Yancey
Chico.....G. H. Taylor
Colusa.....Dr. W. T. Rathbun
Coronado.....Dr. Raffaele Lorini
Dixon.....W. C. Rhem
East San Jose.....Dr. W. A. Low
Elsinore.....Dr. S. E. Ball
Escondido.....Dr. David Crise
Etna.....Dr. W. H. Haines
Eureka.....Dr. W. L. Perrott
Fairfield.....Dr. S. G. Bransford
Ferndale.....Dr. L. Michael
Fort Jones.....Thos. Bransom
Fresno.....Dr. Geo. H. Aiken
Gilroy.....Dr. Jonas Clark
Glendale.....R. E. Chase
Grass Valley.....Dr. J. T. Jones
Hayward.....Dr. F. W. Browning
Healdsburg.....Dr. O. C. Hueb
Hermosa Beach.....H. Vetter
Hollywood.....E. O. Palmer
Huntington Park.....Dr. W. Thompson
Lakeport.....Dr. H. P. Stippe
Livermore.....Dr. H. G. McGill
Lodi.....Dr. F. W. Colman
Long Beach.....Dr. W. H. Newman
Los Angeles.....Dr. L. M. Powers
Los Gatos.....Dr. Elenor S. Yelland
Madera.....Dr. Mary R. Butin
Martinez.....Dr. E. E. Brown
Merced.....Dr. C. H. Castle
Mill Valley.....Capt. M. Staples
Modesto.....Dr. F. R. De Lappe
Monterey..... Martin Birks
Morgan Hill.....Dr. D. W. Watt
Mountain View.....Dr. Philo Hull
Napa.....F. R. Starke
National City.....Dr. Theo. F. Johnson
Nevada City.....Hugh Murchie
Oakland.....Dr. E. N. Ewer
Ontario.....Dr. C. S. Orr
Orange.....Dr. Ida B. Parker
Oroville.....Dr. W. F. Gates
Oxnard.....Dr. Ralph W. Avery
Pacific Grove.....Dr. H. N. Yates
Palo Alto.....Dr. Chas. Boxmeyer
Pasadena.....Dr. Stanley P. Black
Petaluma.....Dr. R. B. Duncan
Placerville.....Robert L. Crocker
Pomona.....Dr. T. J. Wilson
Piedmont.....Geo. T. Burtchael
Redding.....L. D. Poole
Redlands.....Dr. J. M. Wheat
Redondo Beach.....Dr. D. R. Hancock
Richmond.....Dr. H. N. Barney
Riverside.....Dr. Thos. R. Griffith
Sacramento.....Dr. Wm. K. Lindsay
Salinas.....Dr. Garth Parker
San Bernardino.....Dr. J. G. Ham
San Diego.....Dr. F. H. Mead
San Francisco.....Dr. R. G. Brodrick
San Jose.....Dr. A. L. Cothran
San Jacinto.....Charles Long
Santa Ana.....Dr. J. I. Clark
Santa Barbara....Dr. Benjamin Bakewell
Santa Cruz.....Dr. C. H. Anderson
Santa Monica.....Dr. W. H. Parker
Santa Rosa.....Dr. J. W. Jesse
Sisson.....Dr. L. Gouzuet
South Pasadena.....Dr. C. A. Whiting
Stockton.....Dr. S. W. R. Langdon
Turlock.....Dr. E. L. Clough
Vallejo.....Dr. F. T. Bond
Watsonville.....Dr. F. H. Koepke

LIST OF COUNTY HEALTH OFFICERS.

County.	*Health Officer.*	*Address.*
Alameda	Dr. C. L. McKown	Niles
Alpine		
Amador	Dr. E. E. Endicott	Jackson
Butte	Dr. J. E. Knauss	Oroville
Calaveras	Dr. E. W. Weirich	Angels Camp
Colusa	Dr. W. T. Rathbun	Colusa
Contra Costa	Dr. J. Wallace DeWitt	Antioch
Del Norte		
El Dorado	Dr. S. H. Rantz	Placerville
Fresno	Dr. G. L. Long	Fresno
Glenn	Dr. J. A. Randolph	Willows
Humboldt	Dr. J. H. Mallery	Eureka
Imperial	Dr. E. E. Patten	Imperial
Inyo	Dr. I. J. Woodin	Independence
Kern	Dr. W. S. Fowler	Bakersfield
Kings	Dr. W. H. Miller	Hanford
Lake	Dr. W. E. Upton	Kelseyville
Lassen	Dr. E. C. Houston	Bieber
Los Angeles	Dr. O. R. Stafford	3754 Vermont ave., Los Angeles
Madera	Dr. Mary R. Butin	Madera
Marin	Dr. J. H. Kuser	Novato
Mariposa	Dr. H. Kylberg	Mariposa
Mendocino	Dr. John S. Hogshead	Ukiah
Merced	Dr. W. E. Lilley	Merced
Modoc	Dr. John Stile	Alturas
Mono		
Monterey	Dr. Garth Parker	Salinas
Napa	Dr. Adolph J. Kahn (County Physician)	Napa
Nevada	Dr. John T. Jones	Grass Valley
Orange	Dr. C. D. Ball	Santa Ana
Placer	Dr. G. H. Fay	Auburn
Plumas	Dr. G. B. Lasswell	Quincy
Riverside	Dr. Geo. E. Tucker	Riverside
Sacramento	Dr. Hugh Beattie	Elk Grove
San Benito	Dr. R. G. Curtis	Hollister
San Bernardino	Dr. D. C. Strong	San Bernardino
San Diego		
San Francisco	Dr. R. G. Brodrick	San Francisco
San Joaquin	Dr. C. L. Six	Stockton
San Luis Obispo		
San Mateo	Dr. W. G. Beattie	Colma
Santa Barbara	Dr. J. C. Bainbridge	Santa Barbara
Santa Clara	Dr. Wm. Simpson	San Jose
Santa Cruz		
Shasta	Dr. F. Stabel	Redding
Sierra	Dr. R. B. Davy	Downieville
Siskiyou	Dr. F. J. McNulty (County Physician)	Yreka
Solano	Dr. S. G. Bransford	Suisun
Sonoma	Dr. S. S. Bogle	Santa Rosa
Stanislaus	Dr. F. R. De Lappe	Modesto
Sutter	Dr. J. McFadyen	Yuba City
Tehama	Dr. A. P. Tarter	Tehama
Trinity	Dr. D. B. Fields	Weaverville
Tulare	Dr. F. A. Coombs	Visalia
Tuolumne	C. E. Congdon	Jamestown
Ventura	Dr. A. A. Maulhardt	Oxnard
Yolo	Dr. A. E. Blevins	Woodland
Yuba	Dr. J. H. Barr	Marysville

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